PIP2 IT Beam Pattern Generator
System Setup and Run Instructions

System Setup:

1) Connect at 1.300GHz, -10dBm RF source to the chassis “1.3GHz Sample Clk In” port

2) Connect at 162.5MHz, -10dBm RF source to the chassis “162.5MHz RF Clock In” port

Note: These two RF sources should be phase locked together by connecting the 10MHz reference output of one to the reference input of the other. Note: depending on the RF synthesizer, the reference output may need to be enabled via the front panel before its actually turned on. Similarly, the external reference input on the synthesizer may need to be enabled as well.

3) Connect a 20HZ LVTTL trigger signal to the chassis AWG1/2 “Trigger In TTL/50 ohms”
(Ideally, the trigger source should also be phase locked to the RF signals, but this is not absolutely necessary)

4) Connect a USB cable from “AWG1/2 USB I/O” to the host computer

System Run:

5) Power the chassis ON

6) Run the BPG LabView App (LV_BPG_ctrl.exe)
(When the program comes up, the AWG should power ON, as indicated by its fan starting to run / Note that this program controls BOTH AWG channels. Both contain the same waveform pattern data, but each channel has its own independent delay and amplitude controls)

7) In the LV_BPG_ctrl App:

    a. Click the [Load File] button and navigate to the date pattern file (e.g. 550_us_booster.txt), select and click [ok]. The program dialog field at the bottom left-hand side of the GUI should indicate that the file has been loaded.

    b. After the file loads, the GUI info and dialogue fields should populate with pattern data information and the plot windows should show data now.

    c. Edit/Select the desired delays/amplitudes for each AWG channel.

d. Click the [Load Waveforms to AWG] button / data will now be loaded into AWG over USB, the program dialogue field will indicate that the waveforms have been loaded into the AWG and its awaiting triggers.

e. Click the [External Trigger Enable] button: the GUI LED should turn on and the AWG will play out the date pattern!

   Note: If you want to change any parameter (delays, amplitude) with respect to the waveform pattern:

   i. Click the [External Trigger Enable] to turn off the AWG output

   ii. Change the desired parameter(s)

   iii. Click the [Load Waveform to AWG] button to load in the newly-modified pattern to the AWG

   iv. Click the [External Trigger Enable] button to play out the waveform pattern again

Note on Turn-OFF:
If the program is exited, the AWG will stay in the state if was in before the program was shut down. That is, it will not turn off (clicking the GUI [Stop] button only stops the program, not the AWG). Therefore, make sure that the AWG is a desirable state (e.g. waveform playout is turned off) before exiting the LabView application.

Note on Signal Level:
The amplitude controls are (unhelpfully) expressed in units of hundreds of volts. When the control is set to its maximum value of 550V, this is the maximum full-scale swing from 0V….+750mV at the AWG output → this translates to 0V…+1.33V at the single-ended output of the drive amplifier (“DAC A/B Out” ports).